



ANALYTICA CHIMICA ACTA

An International journal devoted to all branches of analytical chemistry

(Full texts are incorporated in CJELSEVIER, a file in the Chemical Journals Online database available on STN International; Abstracted, indexed in: Aluminium Abstracts; Anal. Abstr.; Biol. Abstr.; BIOSIS; Chem. Abstr.; Curr. Contents Phys. Chem. Earth Sci.; Engineered Materials Abstracts; Excerpta Medica; Index Med.; Life Sci.; Mass Spectrom. Bull.; Material Business Alerts; Metals Abstracts; Sci. Citation Index)

Vol. 308 NO. 1-3

CONTENTS

JUNE 9, 1995

Papers presented at the sixth International Conference on Flow Analysis, Toledo, Spain, June 8-11, 1994

Preface.	1
Flow-injection analysis: leaving its teen-years and maturing. A personal reminiscence of its conception and early development E.H. Hansen (Lyngby, Denmark)	3
Flow injection-renewable surface techniques J. Ruzicka (Seattle, WA, USA)	14
Application of photoacoustic spectrometry to flow-injection analysis I. Carrer, P. Cusmai, E. Zanzottera, W. Martinotti and F. Realini (Milan, Italy)	20
Vapour generation Fourier transform infrared spectrometry. A new analytical technique E. López-Anreus, S. Garrigues and M. De la Guardia (València, Spain)	28
Mathematical modelling of flow-injection systems S.D. Kolev (Sofia, Bulgaria)	36
Linear flow gradients for automatic titrations I. López García, P. Viñas, N. Campillo and M. Hernández Córdoba (Murcia, Spain)	67
Automatic implementation of the method of standard additions in unsegmented flow systems M. Agudo, A. Ríos and M. Valcárcel (Córdoba, Spain)	77
Use of submicroliter-volume samples for extending the dynamic range of flow-injection flame atomic absorption spectrometry I. López García, P. Viñas, N. Campillo and M. Hernández Córdoba (Murcia, Spain)	85
Sensors and Electrochemical Techniques	
Flow-injection anodic stripping voltammetry at a gold electrode for selenium(IV) determination D.W. Bryce, A. Izquierdo and M.D. Luque de Castro (Córdoba, Spain)	96
Conductive epoxy-graphite composite as a solid internal reference in a NASICON-based sodium ion-selective electrode for flow-injection analysis J. Bartrolí, L. Alerm (Bellaterra, Spain) P. Fabry and E. Siebert (Saint-Martin d'Héres, France)	102
Spectrophotometric flow-through gas sensor for the determination of atmospheric nitrogen dioxide D. Schepers, G. Schulze and W. Frenzel (Berlin, Germany)	109
Flow-through tubular ion-selective electrodes responsive to anionic surfactants for flow-injection analysis J. Alonso, J. Baró, J. Bartrolí, J. Sánchez and M. Del Valle (Bellaterra, Spain)	115
Construction and use of a tubular picrate ion-selective electrode for reducing sugar determination in Port wine by flow-injection analysis T.I.M.S. Lopes, A.O.S.S. Rangel, J.L.F.C. Lima and M.C.B.S.M. Montenegro (Porto, Portugal)	122

(Continued overleaf)

Amperometric flow-through biosensor for the determination of pesticides C. La Rosa, F. Pariente, L. Hernández and E. Lorenzo (Madrid, Spain)	129
Flow-injection analysis of phenols at a graphite electrode modified with co-immobilised laccase and tyrosinase A.I. Yaropolov, A.N. Kharybin (Moscow, Russian Federation) J. Emnéus, G. Marko-Varga and L. Gorton (Lund, Sweden)	137
<i>Enzyme-based Systems</i>	
Sequential enzymatic monitoring of glucose, ethanol and glutamate in bioreactor fermentation broth containing a high salt concentration by a multi-channel flow-injection analysis method R.L.C. Chen and K. Matsumoto (Fukuoka, Japan)	145
Automatic testing of enzyme modifiers by the flow-gradient technique J. Marcos, A. Ríos and M. Valcárcel (Córdoba, Spain)	152
Fluorimetric-flow injection determination of theophylline based on its inhibitory effect on immobilized alkaline phosphatase M. Sánchez-Cabezudo, J.M. Fernández-Romero and M.D. Luque de Castro (Córdoba, Spain)	159
Enzyme immobilization on an epoxy matrix. Determination of L-arginine by flow-injection techniques A. Alonso, M.J. Almendral, M.D. Báez, M.J. Porras and C. Alonso (Salamanca, Spain)	164
Spectrophotometric determination of L-asparagine by flow-injection analysis using L-asparaginase immobilized on an epoxy resin M.J. Almendral, M.J. Porras, A. Alonso, M.D. Baez and C. Alonso (Salamanca, Spain)	170
Spectrofluorimetric flow-injection determination of potassium in serum based on enzyme activation J.M. Fernández-Romero, M.D. Luque de Castro (Córdoba, Spain) and R. Quiles-Zafra (Toledo, Spain)	178
<i>Process Analysis</i>	
Methods for on-line monitoring to be implemented in an ammonium thiosulphate production plant J.S. Cosano, A. Izquierdo, M.D. Luque de Castro, M. Valcárcel (Córdoba, Spain) C. Aguilar and G. Penelas (Madrid, Spain)	187
Determination of sulfuric acid in metallurgical process streams by discontinuous flow analysis T.J. Cardwell, R.W. Cattrall, G.J. Cross, G.R. O'Connell (Bundoora, Vic., Australia) J.D. Petty (Holland Park, Que., Australia) and G.R. Scollary (Parkville, Vic., Australia)	197
<i>Separation and Preconcentration Techniques</i>	
Efficiency and response studies on gas diffusion manifolds in flow-injection systems R. Tryzell and B. Karlberg (Stockholm, Sweden)	206
Preconcentration of an analyte dialysate in a flow-injection system J.F. Van Staden and C.J. Hattingh (Pretoria, South Africa)	214
Study of mass transfer in on-line analytical parallel-plate dialysers in series in flow injection systems J.F. Van Staden and C.J. Hattingh (Pretoria, South Africa)	222
Two-phase liquid-liquid extraction in monosegmented flow analysis. Determination of cadmium with 1-(2'-pyridylazo)naphthol I. Facchin and C. Pasquini (Campinas, Brazil)	231
Preconcentration and flow-injection multivariate determination of priority pollutant chlorophenols F. Navarro-Viloslada, L.V. Pérez-Arribas, M.E. León-González and L.M. Polo-Díez (Madrid, Spain)	238
On-line pervaporation separation process for the potentiometric determination of fluoride in "dirty" samples I. Papaefstathiou, M.T. Tena and M.D. Luque de Castro (Córdoba, Spain)	246
Simultaneous determination of sterols in edible oils by use of a continuous separation module coupled to a gas chromatograph E. Ballesteros, M. Gallego and M. Valcárcel (Córdoba, Spain)	253
Dynamic analysis of the binding process of bovine serum albumin on glutaraldehyde-activated controlled pore glass H. Ukeda, T. Ishii, M. Sawamura and H. Kusunose (Nankoku, Japan)	261
<i>Precipitation Techniques</i>	
Crystal seeding in flow-injection turbidimetry: determination of total sulfur in plants S.M.B. Brienza, R.P. Sartini, J.A. Gomes Neto and E.A.G. Zagatto (Piracicaba, Brazil)	269
Precipitation flow-injection method for the determination of saccharin in mixtures of sweeteners M.C. Yebra, M. Gallego and M. Valcárcel (Córdoba, Spain)	275

Sequential Injection Analysis

Electroosmotically pumped capillary format sequential injection analysis with a membrane sampling interface for gaseous analytes S. Liu and P.K. Dasgupta (Lubbock, TX, USA)	281
Spectrophotometric determination of calcium in paper machine white water by sequential injection analysis J. Nyman and A. Ivaska (Turku-Åbo, Finland)	286
Sequential flow-injection spectrofluorimetric determination of coumarins using a double-injection single-line system P. Solich, M. Polášek and R. Karlíček (Hradec Králové, Czech Republic)	293

Chemiluminescence and Fluorescence

Flow-injection chemiluminometric determination of ascorbic acid based on its sensitized photooxidation T. Pérez-Ruiz, C. Martínez-Lozano and A. Sanz (Murcia, Spain)	299
Simultaneous flow injection determination of nitrate and nitrite in water by gas-phase chemiluminescence T. Aoki and M. Wakabayashi (Sakai, Fushimi, Japan)	308
Determination of metal ion mixtures using pH gradient flow-injection analysis with fluorescence detection N. Porter, B.T. Hart, R. Morrison (Caulfield East, Vic. Australia) and I.C. Hamilton (Wallsend, NSW, Australia)	313
Spectrofluorimetric determination of berberine in oriental pharmaceutical preparations by flow-injection analysis coupled with liquid–liquid extraction T. Sakai (Toyota, Japan), N. Ohno, Y.S. Chung and H. Nishikawa (Gifu, Japan)	329
Spectrofluorimetric flow injection determination of adrenaline with an iodine solid-phase reactor A. Kojlo (Bialystok, Poland) and J. Martínez Calatayud (Valencia, Spain)	334

Atomic Spectrometry

Time-based device used for the determination of tin by hydride generation flow injection atomic absorption techniques M. Burguera, J.L. Burguera, C. Rivas, P. Carrero, R. Brunetto and M. Gallignani (Mérida, Venezuela)	339
Determination of iron and zinc in adipose tissue by on-line microwave-assisted mineralization and flow-injection graphite furnace atomic absorption spectrometry J.L. Burguera, M. Burguera, P. Carrero, C. Rivas, M. Gallignani and M.R. Brunetto (Mérida, Venezuela)	349
Indirect flow-injection determination of tannins in wines and tea by atomic absorption spectrometry M.C. Yebra, M. Gallego and M. Valcárcel (Córdoba, Spain)	357
Rapid determination of mercury in environmental materials using on-line microwave digestion and atomic fluorescence spectrometry A. Morales-Rubio, M.L. Mena and C.W. McLeod (Sheffield, UK)	364
Microwave-assisted robotic method for the determination of trace metals in soil P. Torres, E. Ballesteros and M.D. Luque de Castro (Córdoba, Spain)	371

UV-visible spectrophotometry

On-line coated columns for the spectrophotometric determination of metals by continuous flow analysis Y.A. Zolotov, I.M. Maksimova, E.I. Morosanova and A.A. Velikorodny (Moscow, Russian Federation)	378
Continuous flow analysis: simultaneous spectrophotometric determinations of metals Yu.A. Zolotov, E.I. Morosanova, S.V. Zhalovannaya and S.S. Dyukarev (Moscow, Russian Federation)	386
Multicommunication in flow analysis. Part 2. Binary sampling for spectrophotometric determination of nickel, iron and chromium in steel alloys P.B. Martelli, B.F. Reis, E.A.M. Kronka, H. Bergamin F (Piracicaba, Brazil) M. Korn (Salvador, Brazil) E.A.G. Zagatto (Piracicaba, Brazil) J.L.F.C. Lima and A.N. Araujo (Porto, Portugal)	397
Photo-induced reduction of nitrate to nitrite and its application to the sensitive determination of nitrate in natural waters S. Motomizu and M. Sanada (Okayama-shi, Japan)	406
Characterization and reduction of interferences in flow-injection analysis for the in situ determination of nitrate and nitrite in sea water A. Daniel (Plouzané, Brest, France) D. Birot, M. Lehaitre and J. Poncin (Plouzané, France)	413
Iron(II) and iron(III) determination in sea water at the nanomolar level with selective on-line preconcentration and spectrophotometric determination S. Blain and P. Tréguer (Brest, France)	425
Flow-injection spectrophotometric determination of trace iron in various salts. Elimination of blank peak effect and use of 2-(5-nitro-2-pyridylazo)-5-(<i>N</i> -propyl- <i>N</i> -sulfopropylamino)phenol as chromogenic agent T. Yamane and H. Yamada (Kofu, Japan)	433

Determination of cadmium in fertilizers by flow-injection spectrophotometry J.A. Gomes Neto, H. Bergamin F, E.A.G. Zagatto and F.J. Krug (Piracicaba, Brazil)	439
Routine assay of creatinine in newborn baby urine by spectrophotometric flow-injection analysis T. Sakai, H. Ohta (Toyota-shi, Japan) N. Ohno (Gifu, Japan) and J. Imai (Gifu-shi, Japan).	446
Continuous-flow spectrophotometric determination of sulfadiazine by diazotisation with in situ preparation of nitrite A. Mellado Romero, C. Gómez Benito and J. Martínez Calatayud (València, Spain)	451
Flow-injection spectrophotometric determination of carbimazole and methimazole C. Sánchez-Pedreño, M.I. Albero, M.S. García and V. Ródenas (Murcia, Spain)	457
Clean analytical method for the determination of propoxur M. De la Guardia, K.D. Khalaf, V. Carbonell and A. Morales-Rubio (Valencia, Spain).	462
<i>Author index</i>	469